

temperature sensor, a thermostat mounted in said vessel, and logic circuitry in electrical communication with said second FET.

40. Apparatus according to claim 39 wherein if no command signal is sent to said first FET from said controller, said first FET is open and said heating element is not energized.

5 41. Apparatus according to claim 39 wherein if a command signal is sent to said first FET from said controller, said first FET is closed and said heating element is energized.

42. Apparatus according to claim 39 wherein if no command signal is sent to said first FET from said controller, but a near zero voltage drop exists across said first FET, then said second FET is commanded to close, thereby sending a current through said fuse which breaks
10 said fuse and disconnects electrical supply to said heating element.

43. Apparatus according to claim 39 wherein if a command signal is sent to said first FET from said controller, but a voltage drop generally greater than zero exists across said first FET, then said apparatus for cleaning or de-icing a vehicle window is commanded to shut
down.

15 44. Apparatus according to claim 4 and further comprising a solenoid in direct electrical communication with a control circuit printed circuit board (PCB) mounted in said vessel, said solenoid determining whether said fluid flows directly to said spray head or flows to said spray head via said vessel.

45. Apparatus according to claim 44 wherein said solenoid is attached to said PCB.

20 46. Apparatus according to claim 44 wherein said PCB is selectively connectable to a vehicle computer, wherein operation of said solenoid and said apparatus for cleaning or de-icing a vehicle window is controllable by at least one of said PCB and said vehicle computer.

47. Apparatus according to claim 7 wherein said pumping system comprises a third operating orientation wherein said pumping system is stopped while the fluid is still flowing
25 towards said vessel, and only after a delay, the fluid is re-routed from a direction towards said vessel to a direction away from said vessel.